Consistency of Higher Order Risk Preferences

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* With help from Louis Eeckhoudt, Ilia Tsetlin and Cary Deck. I alone am responsible for insulting anyone during this presentation.

Conference in Honor of Louis Eeckhoudt
Un économiste extraordinaire

From left to right in photo: Hammit, Treich, Snow, Gollier, Schlesinger & Eeckhoudt (lying down)

Welcome to all invited guests:

All of us who have followed Louis as he leads
us down the path of uncertainty

CONSISTENCY IS IMPORTANT

How do YOU pronounce "EECKHOUDT?"

Louis' answer (which you have all heard before): "As you like …"

I know: Walloon vs. Flemish …
So, are you still surprised that Belgium had no government for years?

So Louis has had some more thoughts about risk attitudes

… together with David Crainich and Alain Trannoy

LOUIS EECKHOUDT

"I have some more thoughts on risk attitudes"

Harris ↑ paying attention

So pay attention while Louis describes his new theory

Louis: ***Let me know if I explain your theory correctly. D'accord*?**

Some people like to combine "good" with "good"

+

Okay. This is Justine Henin. (Still no clue who that is? Ask Louis)

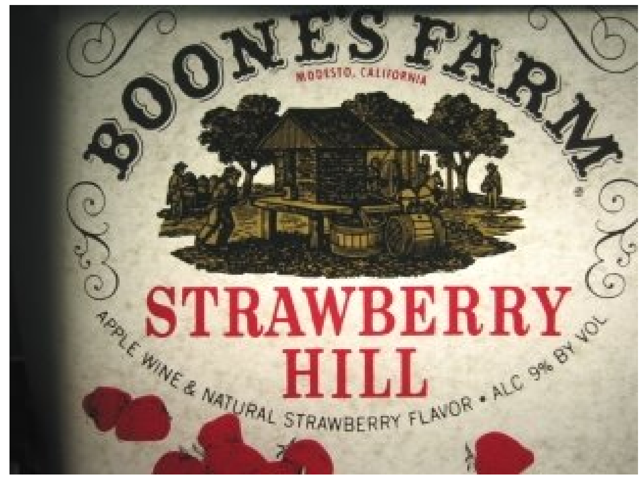
… and also to combine "bad" with "bad"

+

These people are called "mixed drink lovers"

The rest of us like to combine "good" with "bad"

+



These are the people in all of our papers, who are risk averters.

These examples were inspired by Ilia, but of course he used vodkas, not wine & beer.

So my talk today is about these two types of people.

Risk Averters (If you don't know this stuff, you really need to read Louis' papers!)

(AND WHAT THE HELL ARE YOU DOING AT THIS CONFERENCE ANYWAYS??)

Combining Good with Bad **(Eeckhoudt/Schlesinger/Tsetlin, 2009)**

Let G_1 be *better* than B_1 in Nth-order risk **(Ekern, aka "Art's hero", 1980)**

Let G_2 be *better* than B_2 in Mth-order risk

$$[G_1 + B_2,\; B_1 + G_2] \succ_{M+N} [G_1 + G_2,\; B_1 + B_2]$$

Prefer to combine "relatively good" and "relatively bad" outcomes

(Obtain same result with stochastic dominance of orders N and M)

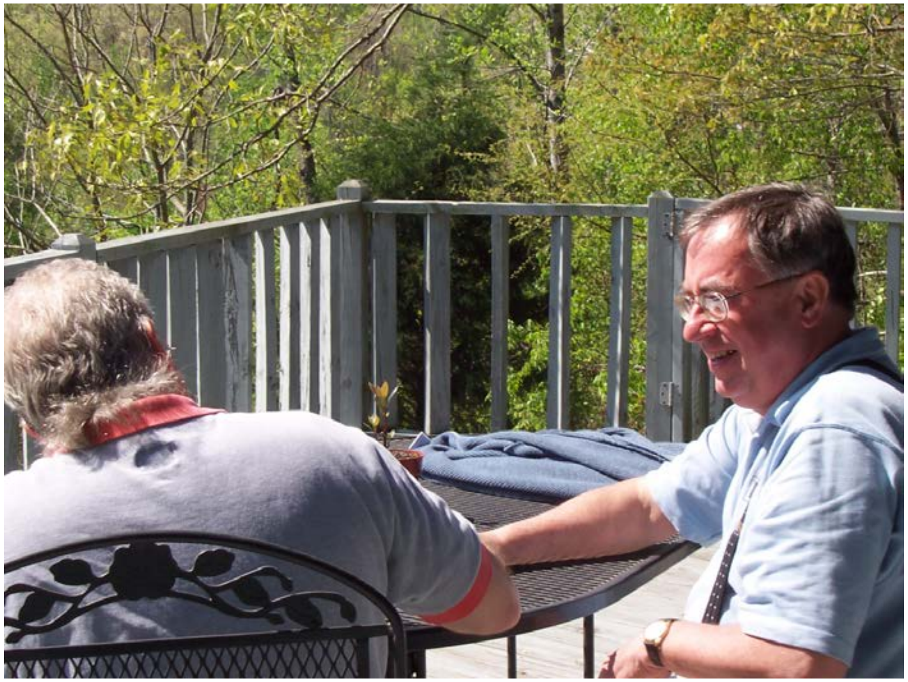
NOTE: In Eeckhoudt & Schlesinger (2006), we always had "zero" as the good outcome.

➔ **"mitigating the harms" (*minus a constant, plus a zero-mean risk, etc*)**

Add to *w*: $[0+\text{Bad}_1, 0+\text{Bad}_2] \succ [\text{Bad}_1+\text{Bad}_2, 0+0]$

But what about mixed risk lovers? (Crainich, Eeckhoudt, Trannoy, 2012)

Above preference is reversed: prefer to combine "good" with "good"



Louis trying to convince me that risk lovers also should have positive third derivatives

"So this economist walks into a bar and asks: what's your third derivative? … And the bartender says …"

Typically, we ignore risk lovers (with excuses)

"They are outliers."
"They just made a mistake."
"They would behave differently if only they had attended a better university."

MICHIGAN STATE UNIVERSITY

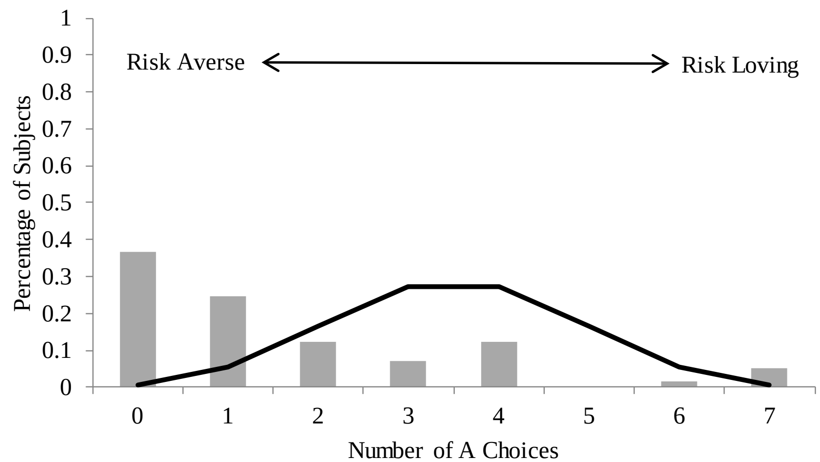
1969-70 Eeckhoudt, Louis Graduate School, Economics

Hypothesis*: Individuals segregate out into

-- Mixed risk averters (prefer to combine “good” with “bad”) ☺+☹

-- Mixed risk lovers (prefer to combine “good” with “good”) ☺+☺

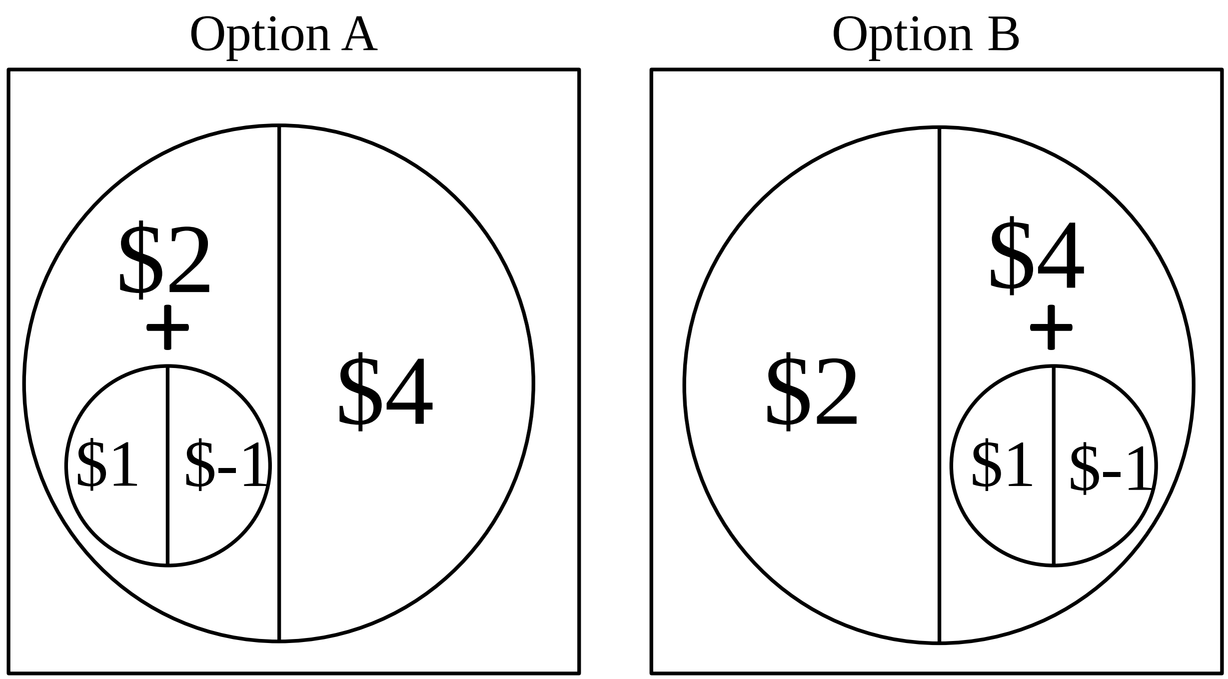
New experiment with Cary Deck (57 subjects U of Arkansas**):**



Distribution of Participant Behavior on 2nd Order Tasks

** Note: As Sebastian Ebert points out. We can easily have “none of the above.”*

Deck & Schlesinger (2012) – simple lottery choice



A Third Order Task, as Presented to Participants

Of course 5th and 6th orders get fairly complicated. More on that later.

Projected higher order risk attitudes

Combine good with bad

*Risk averse** $(u'' < 0)$

Prudent $(u''' > 0)$

Temperate $(u^{(4)} < 0)$

Edgy $(u^{(5)} > 0)$

*R.A. of order 6*** $(u^{(6)} < 0)$

Combine good with good

Risk loving $(u'' > 0)$

Prudent $(u''' > 0)$

Temperate $(u^{(4)} > 0)$

Edgy $(u^{(5)} > 0)$

Anti-R.A. of order 6 $(u^{(6)} > 0)$

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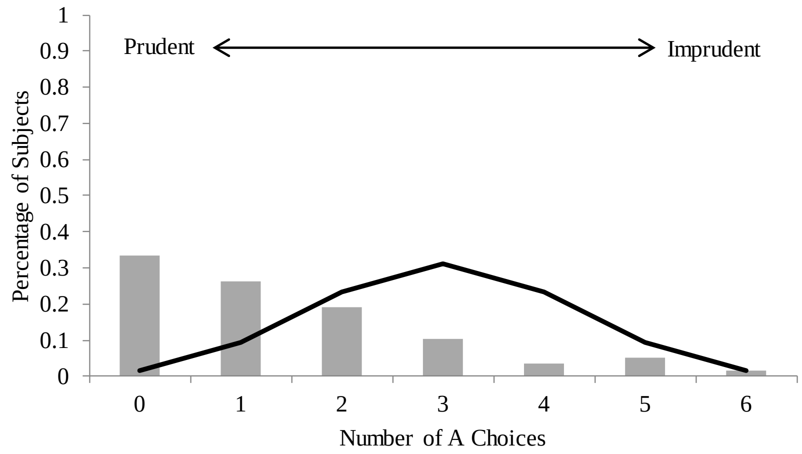
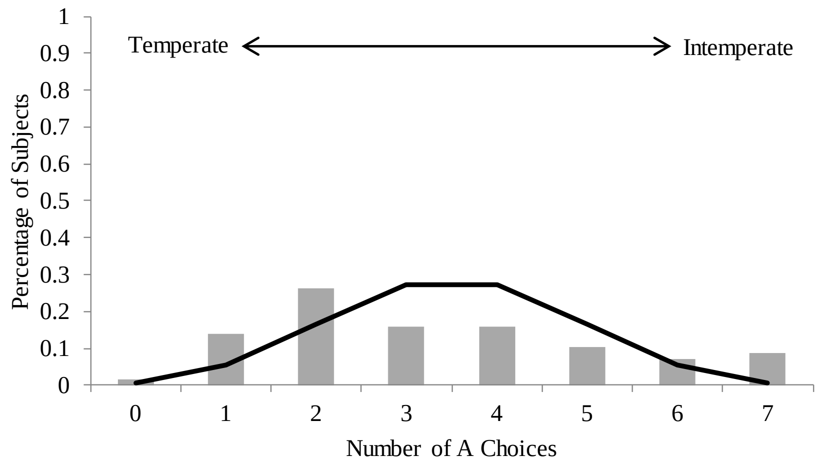
* *"Risk aversion"* (*2nd order*) *was not named by Miles.*

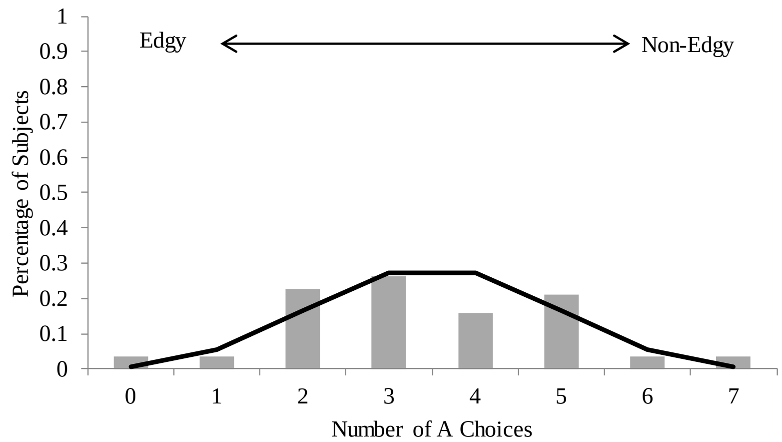
** *The 6th order is still awaiting a name from Miles.*



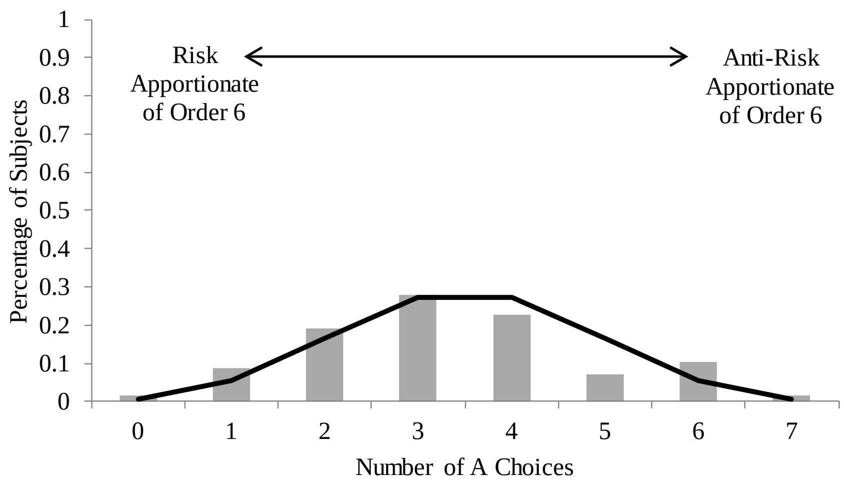
Distribution of Participant Behavior on 3rd Order Tasks



Distribution of Participant Behavior on 4th Order Tasks



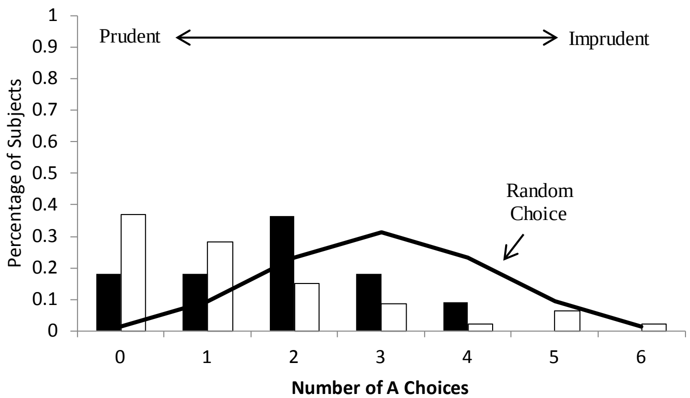
Distribution of Participant Behavior on 5th Order Tasks



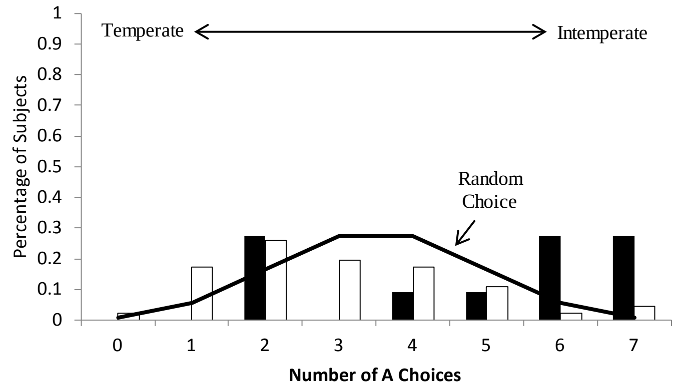
Distribution of Participant Behavior on 6th Order Tasks

Correlation of Individual Behavior Between Tasks of Different Orders

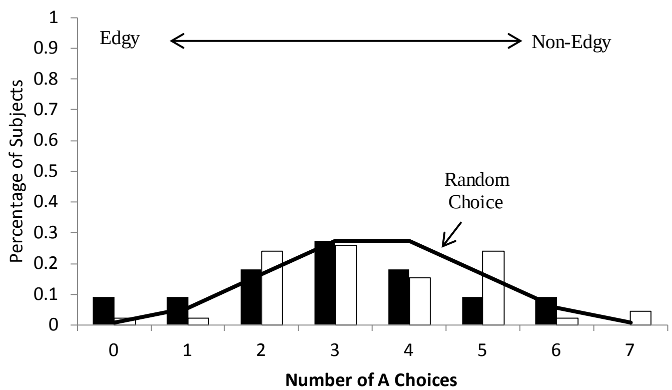
	% A Choices for 3rd Order	**% A Choices for 4th Order**	**% A Choices for 5th Order**	**% A Choices for 6th Order**
% A Choices for 2nd Order	-0.006	**0.471****	-0.228	0.120
% A Choices for 3rd Order	-	0.0556	**0.273***	0.136
% A Choices for **4th Order**	-	-	0.037	**0.398****
% A Choices for 5th Order	-	-	-	0.007
* and ** indicate significance at the 5% and 1% significance levels, respectively.				



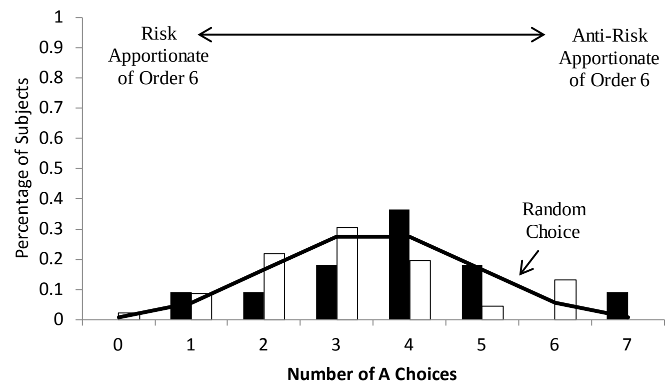
3rd Order (Prudence)



4th Order (Temperance)



5th Order (Edginess)



6th Order (R.A. of order 6)

WHITE = *Risk Averters*

BLACK = *Risk Lovers*

Supporting evidence from other experiments ☺+☺ vs. ☺+ ☹

taking a second look

Deck & Schlesinger (2010), Kuilen, Noussair & Trautmann (2012), Ebert & Wiesen (2010)

-- *Overall stronger tendency for prudence than for temperance*

Kuilen, Noussair & Trautmann (2012)

-- *Positive correlations for all attitudes 2-4,*

but only between 2nd and 4th orders in the lab

Tarazona-Gomez (2004)

-- *Zero correlation between risk aversion and prudence*

Maier & Rüger (2012)

-- *Regress* $Y = \alpha + \beta X$ ***Y = 2nd or 3rd order %*** ***X = 3rd or 4th order %***

Best fit (R^2 = 0.54) *and highest* β *coefficient* (β = 0.91) $Y = 2^{nd}$, $X = 4^{th}$

Concluding Comments

Maybe risk lovers ain't just stupid.

There is a consistency to their madness…

(1) Risk Apportionment (mixed risk averse) ⇔ ☺+ ☹

(2) Non-apportionment (mixed risk loving) ⇔ ☺+☺

Experimental evidence of this dichotomy of types

Consistent with moment preference for first 4 orders. (5^{th}? 6^{th}?)

Okay, can you picture 5^{th} & 6^{th} moments? (*or even name them*?)

Cannot rule out a generalized "house-money effect"

Maxi-max strategy for the risk loving folks? (*skewness*, *kurtosis* …)

Are there parallel NEU problems for higher-order preferences?

Higher-order ambiguity aversion? Baillon (2012)

Higher-order Kreps-Porteus preferences? Bostian & Henzel (2012)

MERCI TO OUR FRIENDS IN TOULOUSE FOR HOSTING THIS CONFERENCE

↑ Nicolas Treich

Jim Hammit

***And especially to our friend* Christian Gollier**
who showed us that all of these successive derivatives can really be important.

Yes, Christian is squatting down in this photo.
Also notice the out-of date glasses!

Louis & Anny visiting Indian mounds in Alabama
(*Praying for the Red Devils*?)

THANK YOU

La Fin